00058810

915.483
Thu/Not
58810

00058810

Digitized with financial assistance from

HT Parekh FOUNDATION

An Initiative by HDFC

WITH YOU, RIGHT THROUGH

on 27 November, 2018

MADRAS GOVERNMENT MUSEUM.

Bulletin No. 2.

NOTE ON TOURS

ALONG THE

MALABAR COAST.

58816

BY

EDGAR THURSTON, C.M.Z.S., ETC.,
Superintendent, Madras Government Museum.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERN
1894.

915.483
Th4/Not
58810

NOTE ON TOURS ALONG THE MALABAR COAST.

Soon after my arrival in India, in 1886, accompanied by my staff of taxidermists, who excel in fish-stuffing, I made a short tour on the western coast of the Madras Presidency, from Cochin southwards by the system of backwaters—the home of otters and crocodiles—to Trivandrum, the capital of the Máhárája of Travancore. The object of this tour was the making of an initial collection of the fishes of Malabar for the Madras museum, and the greater part of the time was spent at Cochin, which affords abundant natural facilities for fish capture. More recently, in 1894, a tour was made from Cochin northward to Cannanore, with halts at Calicut and Tellicherry, with a view to making a survey of the littoral fauna of the Madras coast of the Indian Ocean with the assistance of the dredge.

The work of the tours commenced on each occasion at Trichúr, a large town 20 miles from the station of Shoranúr on the Madras Railway, from which place Trichúr is easily reached, by a well-avenued road, in bullock cart or pony transit. Between Shoranúr and Trichúr is the village of Vadakanchéri, where the best Trichúr mats are made. At Trichúr fishing is actively carried on with nets from boats in the fine open sheet of water, which extends for some miles south of the town. The fish market contained an abundant supply of fish caught locally, as well as fish sent from Cochin by backwater.

At the time of my visit in 1886, the phenomenon of phosphorescence was extremely brilliant on the first night spent on the backwater; the fishes, as they darted to and fro, being so brilliantly illuminated that I at first thought that it must be caused by *Micrococcus phlügeri*, a microscopic luminous organism which grows in colonies on the skin of fishes. But, on collecting some of the water in a tumbler, I discovered that the phosphorescence was really produced by myriads of small medusæ, many of which contained tiny crustacea imbedded in their gelatinous substance. Phosphorescence in all its brilliancy I have, in the course of many wanderings

along the coast of Southern India, only seen on one other occasion, viz., on the Pulicat lake, north of Madras; and, in this instance, it was produced by hosts of *copepods*.

The natives who live along the backwater between Trichúr and Cochin, and rely largely on the products thereof for physiological sustentation, are able to obtain not only an abundance of a bivalve mollusc (*Velorita cyprinoides*), whose shells are collected together and burned into chunám (lime); but also of fish, which they capture with line or net, or, more simply, by wading in the shallow water and picking the fish out of the muddy bottom with their hands. Fish and shell fish, as captured, are cleaned from the adhering mud, and placed in chatties attached to a string held between the teeth, and floating on the surface of the water. The fish which I saw captured in greatest abundance were *Etroplus suratensis*, *Etroplus maculatus*, and *Gobius giuris*.

The town of Cochin is situated on the south side of the entrance of the most considerable river in Malabar. This river opens into the sea out of a broad lagoon with a dense background of cocoanuts, which, with the distant line of hills, wrapped in a grey haze in the spring months, form the leading characteristic of the scenery throughout the whole length of the backwater.

The Cochin backwater abounds in oysters (*Ostreà*, sp.), which live in clumps on the stone and wood-work (freely bored by an isopod crustacean), and have their shells encrusted with anemones, barnacles, and mussels. The oysters, though eaten by the European community, occasionally give rise to an acute intestinal crisis.

The north bank of the Cochin river is formed by the island of Vypeen, which is said to have been created in 1341 A.D. by a cyclone or earthquake. Climbing up the gneiss and conglomerate boulders, which are piled up as groynes at Vypeen point, where the river enters the sea, and serve as an abode for the mollusc *Littorina undulata*, were the crustacea *Grapsus strigosus* and *Metagrapsus messor*.

The shells on the Vypeen shore, used for the manufacture of chunám, belong to coarse species of *Venus*, *Arca*, *Tapes*, &c., evidently rolled in from a distance, and worn or broken by wave action; whereas those on the south shore are more delicate, and suited for museum exhibition. The south shore is riddled with the burrows of giant ocypods (*Ocypoda platytarsis*), the smaller *Ocypoda cordimana*, and the "calling crab," *Gelsimus forceps* (?), which emerge from their hiding

places in the morning and evening, and are difficult to catch as they scamper along the sand.

To travellers Cochin is best known as the home of the Jews, black, white, and half-caste, concerning whose history and customs a great deal of interesting information is contained in Days' *Land of the Permauls; or Cochin Past and Present.* But it is, from a commercial standpoint, a very important centre of trade in coir fibre, cordage, kopra (dried cocoanut kernels), cocoanut oil, ginger, &c.

The exports from Cochin of the products of the sea, in which I am most interested, were in 1892–93—

			Rs.
Fish, salted	lbs.	308,560	45,860
,, dried, not salted	,,	226,002	22,839
,, oil	gals.	12,541	5,874
,, maws[1] / Shark fins	lbs.	17,044	6,683

My camp at Cochin was pitched in the 'compound' of the travellers' bungalow, facing the tidal river, which affords anchorage, in 7 to 9 fathoms, for craft of light draft, such as can pass over the sandy bar, and load and discharge cargo in smooth water. The bungalow is a noted resort of thieves, and was, during my stay there in 1886, guarded at night by a constable armed with the saw of a young saw fish (*Pristis*), with the base cut away so as to form a handle.

From the bungalow a scene of busy activity can be witnessed from early morning until sunset. The large open 'compound,'—the resort of stray cattle and goats, which caused endless annoyance by rubbing their noses into and licking up my specimens drying in the sun—forms a convenient spot for fishermen to spin the cotton thread for their nets by a simple contrivance consisting of a stick weighted at the end to which the thread is attached, and deftly swung round the head. Visitors to the bungalow are beset by professional mendicants making an income out of the prevalent elephantiasis (Cochin leg), which attacks young and old alike; and vendors of stuffed crocodiles with flat glass panes for eyes, and mouths lined with red or yellow flannel, and jewellery of local manufacture made from the small silver coins (*puttans*) of the Native State of Cochin.

[1] "I have to come down from the regions of high finance to grovel among fish maws and shark fins; but these articles will bring me in sufficient revenue to pay for the salary of a High Court Judge for half a year."—*Speech by the Finance Minister to the Imperial Legislative Council*, March, 1894.

Stored in the bungalow 'compound' are casks of fresh water, brought daily from the sanitarium of Alwayi, about 20 miles from Cochin. The water of the Alwayi river, from which I obtained a unique dredging consisting of stone gods, has a good reputation, and on it the European community of Cochin depends largely for its supply of wholesome water.

At the time of my visit to Cochin in 1894, boring operations, in search for good water, were being actively pushed forward near the protestant church, one of the oldest, if not the oldest, European churches in India. The Dutch tombstones, the legends on many of which commence with the words 'Hier rust' (though the bones 'rust' elsewhere) had been transferred, between my visits in 1886 and 1894, from the floor to the walls of the church.

Lining the Cochin river on both the north and south banks are rows of Chinese or parallelogram dip-nets, about 16 feet square, which are let down into the water, and, after a few minutes, drawn up again. These nets afford an easy and certain source of income, and, like other fixed engines, "produce an 'unearned increment' to the owner, irrespective of his skill, or of his being a member of the fishing community proper."[2] The men who work the nets stand protected from the sun within a cadjan shed or beneath the shade of a portia[3] or 'tulip tree' (*Thespesia populnea*), whence they emerge to pick the fish out of the net (the apex or bottom of which is brought within reach by a long rope) with a hand-net. When the fishes are small and few in number, the fishermen are defeated by the ever-watchful crows, who in company with pariah kites (*Milvus Govinda*) sit perched on the wooden framework of the net, waiting anxiously for it to be hoisted up out of the water.

In March, 1886, enormous quantities of mullet (*Mugil pœcilus*), characterised by a deep black spot in the centre of the scales, were being caught daily in the parallelogram nets. This fish is used extensively as food, and the roe is considered a great delicacy. Another species of mullet (*M. cunnesius*) was also caught, but in far smaller quantities.

Placed across the Cochin backwater, in which long-nosed dolphins (*Delphinus dussumieri*) may frequently be seen

---

[2] F. J. Talfourd Chater, Prize Essay. *Fisheries Exhibition, London*, 1883.

[3] "The word portia is a corruption of Tamil pu-arassu, flower-king." *Hobson-Jobson.*

disporting themselves, are bamboo labyrinths and rows of bamboo stakes with nets affixed thereto at flood-tide. These bamboo stakes serve as convenient perches for hosts of the smaller sea tern (*Thalasseus bengalensis*) on the look-out for food. Fishermen, simply clad in a loin-cloth and wide-spreading circular hat made of palmyra leaves, may constantly be seen fishing in the river or backwater from canoes ('dug-outs') with lines or nets; fishing with bait from the jetties; or, in the cold season, trolling at the mouth of the river for bà-mìn (*Polynemus tetradactylus*), a specimen of which, estimated as weighing over 300 lbs., and a load for six men, was recorded by Buchanan Hamilton ('Fish-Ganges') from the Gangetic estuary.

The deep-sea boats (*i.e.*, the boats which fish outside the shallow waters of the littoral zone) secured daily, in March, 1886, large hauls of *Engraulis malabaricus*, *Engraulis indicus* ('anchovy'), and *Dussumieria acuta*, known all along the Malabar coast as the sardine. These fishes are salted and dried for food, and the surplus is used for the extraction of fish-oil. Also brought in by the deep-sea boats for sale in the fish bazár, were the common crustacea *Neptunus pelagicus*, *Neptunus sanguinolentus*, *Thalamita prymna*, and *Squilla nepa*.

Fish-oil is extracted in largest quantities at Cochin from August to December. Hundreds of tons of the oil are said to have been annually exported from Cochin in former times, and I find that the average export thereof in the five years 1856 to 1861 was 19,630 cwt. The oil-trade is, however, reported to be decreasing year by year. In some seasons the sardines arrive off the coast in enormous numbers, or, for several consecutive years, they may be present only in quantities sufficient for purposes of food. The result of this irregularity is that one important element of success in commercial enterprise—regular supply—is wanting. In some years large shoals of sardines appear, and suddenly disappear. Contracts for the supply of oil are made on the arrival of the fishes, and, in the event of their disappearance, the contractor loses heavily. The natives of Cochin say that formerly the sardines always arrived regularly, and remained throughout the season; and the fishermen's belief is that they are at the present day frightened away by the numerous steamers which call at Cochin, and retire in search of a less disturbed spot. In addition to steam-boat traffic, noises in boats, ringing church bells, artillery practice, the erection of light-

houses, gutting fish at sea, using fish as manure, burning kelp, and the wickedness of the people, have been charged with being responsible for a falling-off of the fish supply; but, as Mr. C. E. Fryer naively remarks [4] "of these alleged causes only the last, it is to be feared, has been, and is likely to be, a permanent factor in the case."

The preparation of the evil-smelling fish-oil is carried out in large iron cauldrons, in which the fish are boiled with a little water. The oil, as it exudes, rises to the surface, is strained through cloth, and stored in barrels. The residue in the cauldrons is preserved and utilised as manure for cocoanut gardens, paddy fields, &c.

A rougher and cheaper process of oil extraction, by which the cost of cauldrons and firewood was saved, has been practically put a stop to as being an offensive trade. This process consisted simply in putting the fishes into a canoe, and exposing them to the influence of the sun until decomposition set in. The oil then rose to the surface and was removed with a scoop. By this crude process a comparatively small quantity of oil was obtained.

A portion of the oil is consumed locally by boat owners for smearing their boats so as to preserve the wood and coir rope, with which the planks are stitched together. But the bulk is exported to Europe and some Indian ports. The natives believe that the oil returns from Europe in the guise of cod-liver oil.

During my stay at Cochin a journey was made by backwater to the mud-bank of Narrakal, which, like that of Alleppy, affords smooth water anchorage for big ships during the boisterous weather of the south-west monsoon. The mode of formation of these mud-banks, which has given rise to much speculation, has been most recently dealt with by Mr. P. Lake [5] of the Geological Survey of India, who states his opinion that "the Narrakal mud-bank is very probably, to a large extent, formed of the silt carried down by the Cranganore river. It does not appear to be very much affected by the rise of the backwaters."

The surface of the vast liquid mud-flats of the backwater between Cochin and Narrakal, through which our boat was laboriously propelled, is covered with a dense mass of a mollusc (*Telescopium fuscum*), which produces a curious

[4] *Fisheries Exhibition, London*, 1883. Prize Essay.

[5] See Lake *Rec. Geol. Surv. Ind.*, vol. XXIII, 1890; and King. *Rec. Geol. Surv. Ind.*, vol. XVII, 1884.

appearance as of the spikes of the helmets of a submerged army. On the sandy shore at Narrakal great quantities of the mollusc *Dactylina orientalis,* were being washed up by the in-flowing tide; and the neighbouring muddy shore was strewed with full grown shells of the pearl-oyster, *Avicula fucata.* These pearl-oyster shells were not worn, and must have been rolled in by the sea from a bank at no great distance from the shore. Of the existence of such a bank I can find no record; but, in the event of the shells being recognised hereafter, it would be worthwhile to have an inspection made on the chance of discovering a bank which might yield material for a fishery on a small scale by the Tuticorin divers.

A single night's journey by British India coasting steamer brought me from Cochin to Calicut, the chief town of the Malabar district. Landing was possible from a wherry at the sandy beach, on which, except during the south-west monsoon storms, the waves flow with a gentle ripple, affording a strong contrast to the surf-beaten shore at Cochin.

A cursory examination of 'specimens' washed on shore showed at a glance that the littoral fauna of Calicut differs in a very marked degree from that of Cochin, and demonstrated the necessity of detailed examination of the entire coast line, if any semblance of an approach to an accurate knowledge and museum record of the nature and distribution of the littoral fauna of Southern India (with which alone I am concerned) is to be acquired.

For the great mass of visitors to museums in India,[6] who come under the heading of sight-seers, and who regard museums as *tamasha* or wonder houses, it matters but little what exhibits are displayed, or how they are displayed, provided only that they are attractive. I am myself repeatedly amused by seeing visitors to the Madras museum pass hurriedly and silently through the arranged galleries, and linger long and noisily over a heterogeneous collection of native figures, toys, painted models of fruits, &c. But, in addition to the sight-seers, those have to be considered who regard museums in the light of institutions where they should

[6] The numbers of visitors to the Madras museum during the years 1888–94 were as follows:—

1889-90	378,234
1890-91	364,542
1891-92	361,452
1892-93	341,238
1893-94	311,112

be able to acquire solid information; and our Indian museums would be fulfilling a very useful function if, in the capital city of each province, collections were brought together and properly exhibited, illustrating and forming a classified index to the natural history, ethnology, arts, archæology, economic resources, &c., of the province concerned.

To return, however, to Calicut. Not only do many of the delicate mollusca washed on shore belong to different genera to those at Cochin, but very conspicuous by their abundance were the siphonophora *Velella* and *Physalia* (Portuguese man-of-war); the shells of an edible mollusc (*Mytilus viridis*); the young of the cirrhiped *Balanus tintinnabulum*, the carapaces of the crustacean *Matuta miersii*;[7] the burrowing crustacean *Hippa asiatica*, swarms of which are destroyed by fishermen with each cast of their shore nets, and heaped upon shore; sharks' vertebræ, teeth, and egg-cases attached to drift coir fibre; worn madreporarian coral fragments, doubtless carried across by currents from the Laccadive Islands; and a pennatulid (*Cavernularia malabarica*, sp. n., Fowler.) This pennatulid was being cast ashore in large numbers at the time of a visit to Calicut during the south-west monsoon, 1893, with the object of ascertaining whether Calicut could serve as a source of supply of cowry shells (*Cypræa moneta*) for the Belgian Congo State.[8]

The crustacean *Hippa asiatica*, which lies buried between tide-marks on the Calicut beach, is collected by digging with the hands, roasted with medicinal herbs purchased in the bazár, and applied as a fomentation to sore legs.

After some days spent in dredging at Calicut, the journey was continued by road to Tellicherry, one of the most delightful drives in the plains of Southern India. Conspicuous by their abundance were the cocoanut, and betel palm (*Areca Catechu*); the deciduous silk-cotton tree (*Bombax malabaricum*) in full flower; black pepper vines (*Piper nigrum*) twining up the trunks, and sheltered by the branches of the coral tree (*Erythrina indica*); the cashew (*Anacardium occidentale*) laden with ripening nuts; and jack-fruit trees (*Artocarpus integrifolia*) with the young fruits protected by wicker baskets from the attacks of predatory birds.

The transfer of the pony carts to the ferry boats, by which the passage of the three rivers opening into the sea

[7] J. R. Henderson, *Journ., Mad. Lit. Soc.*, 1887.
[8] The supply was eventually arranged for by a Bombay firm.

between Calicut and Tellicherry is effected, afforded an opportunity of studying the habits of the 'calling' or 'dhobi' crabs (*Gelasimus annulipes*), which abound in the mud between tide-marks. These crabs were hard at work with their young families making the burrows which serve as their dwelling places; the adults bringing up between their feet from the bottom of the burrows in course of construction mud rolled into pellets, which they pushed with their feet to a distance of several inches from the mouth of the burrow; cleaning the feet from adherent particles of mud, and again descending into the burrow, remaining under ground from ten to twenty seconds. In the work of removing the mud pellets from the mouths of the burrows the adults were zealously assisted by the young.

A few miles south of Tellicherry the quiet and picturesque French settlement of Mahé was passed, and at the octroi or customs chowki declaration of contraband goods, alcoholic and other, had to be made. At Mahé the manufacture of *sardines à l'huile* is, I believe, still carried on; and that fish-curing operations are carried on there was clear from the strong odour at the northern outskirts of the town.

Tellicherry with its miniature bays, low cliffs of gneiss and laterite (extensively used for building purposes), and sea-girt rocks forming a natural brickwater, is a charmingly picturesque place, which ranks high as a centre for fish-curing operations, as is evidenced by the following statistics gleaned from the administration reports of the department of salt revenue:—

Year.	Weight of fish cured.	Weight of Salt issued.
	MAUNDS.	MAUNDS.
1888-89	88,675	14,654
1889-90	89,162	12,655
1890-91	103,705	15,344
1891-92	93,733	12,556
1892-93	104,226	13,708

Fish-curing operations were slack at the time of my visit in March 1894; only a few sardines and mackerel (*Scomber microlepidotus*), which is not nearly such good eating as the British mackerel, being in various stages of preparation.

Sardines are caught in large numbers from October to January, either close in shore, in two or three fathoms, or

58810

from eight to ten miles out at sea. If they are very oily, a boat-load will be worth only from 8 annas to a rupee, as the fishes are, when in this condition, unsuited for salting and drying. The surplus supply of sardines is sent to Coorg, Travancore, Colombo, etc., as fish-manure for planters' estates, at the rate of Rs. 27 to Rs. 28 per ton at Tellicherry. Those fish which are salted and dried for food are sent up-country to Coorg, the Wynád, &c., and by coasting steamer to Tuticorin and other coast towns, freight being charged at the rate of 12 annas per bundle of 165 lbs.

The Tellicherry fish-curing yards are situated on the shore at the southern extremity of the town in proximity to the fishermen's quarters. The shore opposite the yards was, at the time of my visit, crowded with a dense mass of crows and terns on the look-out for succulent fish morsels.

The cost of the store-houses and fences and of keeping them in good repair has to be borne by the fish-curers, for the most part Mukkuvar women, who, as set forth in a recent petition to His Excellency the Governor of Madras, "have to "work in the fish-curing yards both day and night, and sepa-"rate themselves from their babies." The annual expenditure under this head is said to amount to Rs. 250 to Rs. 300 at Tellicherry, and Rs. 150 at Cannanore; the greater expense at the former place being due to the fact that the fences are there situated near the sea and get damaged by the breakers during the south-west monsoon.

The boat-owners, who keep the boats in repair and supply the nets, allow the boat's crew (fourteen men to a pair of boats) half the value of the take, which is divided among the men; and, in addition, encourage them to work by giving them a present of a small percentage of the fish. The crew have to be maintained by the boat-owner, to whose service they are pledged, during the south-west monsoon from June to October, when, unless the monsoon is exceptionally light, fishing operations come to a standstill. The boat-owners hand over their share of the spoil to their own ticket-holders (licensed fish-curers), or sell it to other ticket-holders.

The boats, which cost from Rs. 250 to Rs. 500, are made of *aini* wood (*Artocarpus hirsuta*, a lofty evergreen tree of the western ghâts), and last for many years. The nets cost from Rs. 50 to Rs. 200. A pair of properly equipped boats requires about twenty nets, valued at about Rs. 1,500, adapted for catching different kinds of fish, *e.g.*, nets of narrow mesh and thin thread for sardines and mackerel, and of wide mesh and thick thread for cat-fishes.

The boats, on their return from the fishing ground, are beached opposite the fish-yards, which, with the prevailing odour (far less offensive, however, than the odour of putridity which emanates from decomposing oysters) recalled the days spent in the pearling camp at Tuticorin. The fish, as soon as they are landed, are taken to a shed outside the fence which protects the curing-yards against thieves, where they are cleaned; the guts (which might be utilised as manure) being buried in the sand. They are then carried down to the sea in baskets and washed. After washing, they are taken to the weighing shed, where they are weighed, and government salt is issued in proportion to the weight of the fish at a rate, which has in recent years been raised from 12 annas to 1 rupee per maund.

At Tellicherry a sub-Inspector assisted by a staff of peons is responsible for weighment of the fish and distribution of salt to the ticket-holders, who number over a hundred. After a good haul, a ticket-holder may have 60–70 maunds of fish or more. The whole of this has to be weighed, calculations have to be made, and salt has to be issued under the direction of the single official with, I was informed, the result that the ticket-holders may have have to wait from morning till evening for their salt, the fish meanwhile softening under the influence of the sun.

As soon as salt has been delivered to the fish-curers, the fish are removed to a shed within the fence, salted and put in tubs, wherein small fish have to remain for one night, big fish for two nights. When the salting is complete, the fish are washed in water, which has to be brought from the sea to the yard, and dried on matting in a space allotted to the ticket-holder, covered in by netting to keep out thieving birds.

Big fish are thoroughly dried in four days; small fish, *e.g.*, sardines, in one to three days. When dry, the produce is, in compliance with the rules, again weighed, and either sold to traders, or stored in a shop for which a small municipal tax has to be paid.

The fish are not allowed to be removed from the yard until they are thoroughly dried, and the Mukkuvar fishing community, who seem to suffer from competition with other and richer natives (Moplas and others) with more capital at their command, who deal in cured fish, and buy up a great deal of the fish which comes into the market, complain that they are in consequence precluded from selling partially dried

fish, when a demand for it arises. I was told that the natives of Madura, Chittoor, Vellore, and other places, prefer fish salted without drying, and that the demand cannot be met, as the fish must be thoroughly dried before they leave the yard.

The Mukkuvars complain further that, if, as I was told, happens repeatedly during the north-east monsoon, when big fish, *e.g.*, seir and cat-fish, are caught, the boats come in after 9 P.M., the fish-curers cannot obtain salt until the following morning, by which time decomposition has commenced; and, in the petition to which reference has been made, they asked *inter alia*, that salt be ordered to be supplied to them in the yard at all hours of the day and night, when they require it.

The steady development of the fishing industry on both the east and west coasts of the Madras Presidency in recent years, and the greater importance of the industry on the west than on the east coast are shown by the following tables[9]:

Year.	Weight of fish brought to be cured.		Total.
	East Coast.	West Coast.	
	TONS.	TONS.	TONS.
1886–87	9,526	20,847	30,373
1887–88	12,637	24,858	37,495
1888–89	15,781	25,830	41,611
1889–90	15,233	28,263	43,496
1890–91	16,426	33,768	50,194
1891–92	16,692	30,769	47,461
1892–93	15,737	29,263	45,000

The importance of the Malabar fish industry, relatively to that of the eleven other districts of the Madras Presidency, in which the industry is carried on, is shown by the following table[9]:

Year.	Quantity of salt-fish manufactured in the Malabar district.	Total quantity of salted fish manufactured in all districts of the Presidency.
	MAUNDS.	MAUNDS.
1890–91	434,669	796,500
1891–92	444,300	792,047
1892–93	426,612	732,651

[9] Administration Report of the Department of Salt Revenue.

In the British trade different kinds of fish are distinguished by the terms 'prime' and 'offal'; and, as the names imply, the former are consumed by the richer, the latter by the poorer classes. In India, even more than in Great Britain, the fish supply is essentially a poor man's question, and the prosperity of the fishing industry depends on the offal, and not on the prime.

In the city of Madras, the 'microscopic minority' of Europeans, who are regular fish-eaters, will go on year after year without seeing at their table any other fish, out of the large variety which is sold in the fish bazár, than seir (several species of *Cybium guttatum*); pomphret, white, silver, grey, [10] or black (*Stromateus sinensis*, *S. cinereus* and *S. niger*); the so-called 'whiting' (*Sillago sihama*); and perhaps an occasional flat-fish (*Psettodes erumei*), which is a poor substitute for the British sole. During three years in Calcutta I only saw served up *hilsa* (*Clupea ilisha*), which, though bony, is excellent when smoked; *begti* (*Lates calcarifer*), and the mangoe fish or *tupsee muchee* (*Polynemus paradiseus*), which comes up the Hooghly river for spawning purposes in very large numbers. Again, at Cochin, out of about forty different kinds of fish classed as edible by natives, which were being caught at the time of my visit, only four were considered fit to place before me, viz., seir, 'whiting', mullet, and sardines.

In the waters of the Bay of Bengal and Indian Ocean, by which the Madras Presidency is bounded, with their enormous and varied fish resources, it may be safely said that there is no danger of exhaustion of supply from overfishing. The fishing industry is, in fact, from want of capital and lack of commercial enterprise, on the part of the native fishing community, carried on at present on too small a scale to be really profitable, and is capable of great expansion.

In the British seas trawl-fishing is carried on at a distance of 80 to 100 miles from the nearest port, whereas, in the Madras Presidency, *e.g.*, at Tellicherry, the 'deep-sea' boats only go out from 8 to 10 miles from the coast. Short, however, as is this distance, speed in reaching the shore is an advantage, for the boats (in which no provision is made for protection of the fish from the sun), are not allowed by

[10] Silver pomphret is the immature, and grey pomphret the adult *Stromateus cinereus*.

the regulations to take salt to the fishing ground, and, as is well known, decomposition sets in, in tropical climates, with terrible rapidity.

The coast trade is amply provided for by the service of coasting steamers, which constantly ply from port to port, and serve as an easy medium of communication with Colombo, the Clapham Junction of the east. Tellicherry is, however, 40 miles distant from the terminus of the Madras Railway at Calicut; but increased railway communication, with favourable rates for the carriage of fish, and refrigerating vans would do much to advance the up-country distribution of fish, both prime and offal. From returns supplied by the Traffic Manager of the Madras Railway Company, I find that the weight of salt-fish consigned from the west coast (at the rate of 8 pies per ton per mile at owner's risk, and 10 pies at the Company's risk) during the years 1889–93, was as follows:—

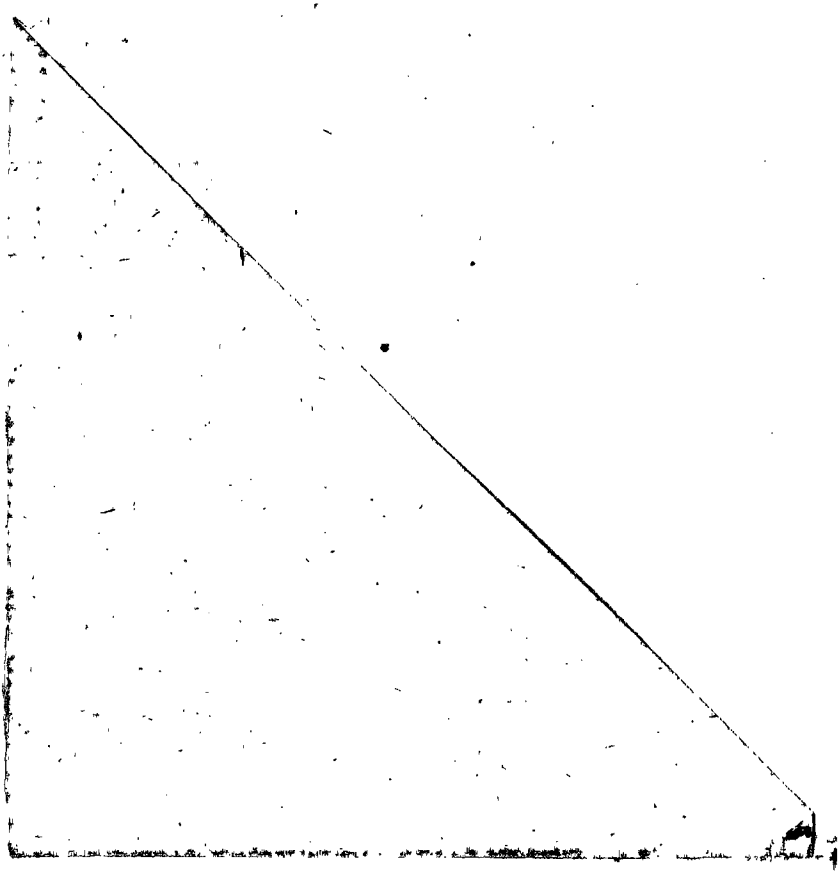
Year.	From				Total.
	Tirur.	Tanur.	Parpan-gadi.	Calicut.	
	MAUNDS.	MAUNDS.	MAUNDS.	MAUNDS.	MAUNDS.
1889 . ..	51,796	42,618	27,399	22,280	144,093
1890	56,342	48,392	30,331	22,024	157,089
1891	64,040	53,045	30,631	15,348	163,064
1892	44,561	39,849	31,938	15,152	131,500
1893	44,484	31,974	27,446	16,820	120,724

The bulk of the traffic takes place between September and March, and coincides with the time at which fishing is most actively carried on.

For the development of the export trade from the Madras Presidency, which, at the present day, extends outside India (including Burma) practically only to Ceylon, the adoption of improved methods of fish-curing is essential. On this point the Tellicherry boat-owners, who interviewed me, say "How can the poor Mukkuvars afford to introduce improvements?"

It has been argued, with reference to the British fisheries, that "the State should neglect no opportunity of master-"ing, through the agency of duly-qualified department, every "detail, natural, as well as artificial, of the fishing industry, "and might do much, apart entirely from 'protection' and "'encouragement' of the fishing industry." Whether the

native fishing community should be trained in improved methods of fish-curing under the direction of experts versed in the methods adopted in the big fish-curing establishments of Europe; whether they should, in their own interests, make an effort to send one or more members of their community to Europe to study these methods for themselves; or whether one or more officials should be deputed to Europe with the object of learning how far the European methods are capable of application to India, it is unnecessary to discuss in this note.



00058810

Digitized with financial assistance from

HT Parekh FOUNDATION

An Initiative by HDFC

WITH YOU, RIGHT THROUGH

on 27 November, 2018